

What is claimed is:

1. In a system including: at least one storage device, each equipped with a real volume; a virtualization device connected to said at least one storage device by way of a network and managing a real volume of said at least one storage device as a virtual volume; and a management server connected to said at least one storage device and said virtualization device by way of a management network;
 - a failure notification receiving method comprising the steps of:
 - a failure notification step for said management server to receive a plurality of failure notifications from said at least one storage device and said virtualization device at which a failure is detected;
 - an associating step for said management server to associate said plurality of failure notifications based on associations managed by said virtualization device between said real volume and said virtual volume; and
 - a failure message outputting step for outputting results in which said plurality of failure notifications is associated.
2. A method for managing failure information as described in claim 1 wherein said associating step includes a step for associating a plurality of failure notifications involving a shared real volume or virtual volume related to a failure notified by a failure notification.
3. A method for managing failure information as described in claim 2 wherein said associating step includes a step for associating a plurality of failure notifications received by said management server within a fixed time interval.
4. A method for managing failure information as described in claim further comprising the steps of:
 - a step for having said management server receive configuration information about said network from a device connected to said network; and
 - a step for having said management server identify an association relationship between said real volume and said virtual volume based on said configuration information.
5. A method for managing failure information as described in claim 1 wherein:
 - said associating step includes a step for identifying causal relationships between said plurality of failure notifications based on an association relationship between said real volume and said virtual volume; and
 - said outputting step includes a step for outputting said identified causal relationships.
6. A method for managing failure information as described in claim 5 wherein:
 - said step for identifying causal relationships includes a step for associating a plurality of failure notifications involving a shared real volume or virtual volume related to a failure notified by a failure notification; and
 - a step for identifying, out of said associated failure notifications, a failure notification notifying a hardware malfunction as a failure notification notifying a failure

cause and a failure notification notifying an access error as a failure notification issued under influence of said failure cause.

7. A method for managing failure information as described in claim 1 further comprising the steps of:

- a step for having said management server take a plurality of severity information, indicating severity of failure information based on different standards, contained in a plurality of failure notifications received by said at least one storage device or said virtualization device at which said failure is detected and convert said severity information to severity information based on a common standard; and

- a step for having said management server output failure information based on converted severity information according to a method determined ahead of time.

8. In a system including: a plurality of storage devices connected to a server device by way of a network; and a management server connected to said plurality of storage devices by way of a management network,

- a method for managing failure information comprising the steps of:

- a failure notification receiving step for having said management server receive a plurality of failure notifications from a plurality of storage devices at which failures are detected;

- a converting step for converting a plurality of severity information, indicating severity of failure information based on different standards, contained in said plurality of failure notifications to severity information based on a common standard; and

- a processing step processing each of said plurality of failure notifications based on converted severity information.

9. A method for managing failure information as described in claim 8 wherein said converting step is executed based on configuration information of said network.

10. A method for managing failure information as described in claim 9 wherein:

- one of said plurality of storage devices manages a real volume in another storage device as a virtual volume; and

- said converting step is executed based on an association relationship between said real volume and said virtual volume managed by said one of said plurality of storage devices.

11. In a management server connected by way of a management network to at least one storage device including a real volume and a virtualization device connected by way of a network to said at least one storage device and managing said real volume of said at least one storage device as a virtual volume,

- a management server comprising:

- an interface control module for connecting to said management network;

- a processor;

- a memory storing a program executed by said processor and information used by said processor;

- an output module outputting processing results from operations executed by said processor;

wherein:

said interface control module receives a plurality of failure notifications from said at least one storage device and said virtualization device at which a failure is detected;

said processor associates said plurality of failure notifications based on an association relationship between said real volume and said virtual volume managed by said virtualization device; and

said output module outputs results from said processor in which said failure notifications are associated.

12. A management server as described in claim 11 wherein said processor associates a plurality of failure notifications involving a shared real volume or virtual volume related to a failure notified by a failure notification.

13. A management server as described in claim 12 wherein said processor associates a plurality of failure notifications received by said interface control module within a fixed time interval.

14. A management server as described in claim 12 wherein:

said interface control module receives configuration information about said network from a device connected to said network; and

said processor identifies an association relationship between said real volume and said virtual volume based on said configuration information.

15. A management server as described in claim 11 wherein:

said processor identifies causal relationships between said plurality of failure notifications based on an association relationship between said real volume and said virtual volume; and

said outputting module outputs said identified causal relationships.

16. A management server as described in claim 15 wherein:

said processor associates a plurality of failure notifications involving a shared real volume or virtual volume related to a failure notified by a failure notification; and

out of said associated failure notifications, a failure notification notifying a hardware malfunction is identified as a failure notification notifying a failure cause and a failure notification notifying an access error is identified as a failure notification issued under influence of said failure cause.

17. A management server as described in claim 11 wherein:

said processor takes a plurality of severity information, indicating severity of failure information based on different standards, contained in a plurality of failure notifications received by said at least one storage device or said virtualization device at which said failure is detected and converts said severity information to severity information based on a common standard; and

said output module outputs failure information based on converted severity information according to a method determined ahead of time.

18. In a management server connected by way of a management network to a plurality of storage devices connected to a server device by way of a network,
a management server comprising:
an interface control module connected to said management network;
a processor; and
an output module outputting processing results from operations executed by said processor;
wherein:
said interface control module receives a plurality of failure notifications from a plurality of storage devices at which failures are detected; and
said processor converts a plurality of severity information, indicating severity of failure information based on different standards, contained in said plurality of failure notifications to severity information based on a common standard and processes each of said plurality of failure notifications based on said converted severity information.

19. A management server as described in claim 18 wherein:
said processor converts said plurality of severity information based on different standards to severity information based on a common standard using configuration information about said network.

20. A management server as described in claim 19 wherein:
one of said plurality of storage devices manages a real volume of another storage device as a virtual volume; and
said processor converts said plurality of severity information based on different standards to severity information based on a common standard using an association relationship between said real volume and said virtual volume managed by said one of said plurality of storage devices.